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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,103	10/05/2004	Tetsuo Uozumi	040302-0408	5072

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EXAMINER
BEST, ZACHARY P

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
11/07/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/510,103	UOZUMI, TETSUO	
	Examiner	Art Unit	
	Zachary Best	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-23* is/are pending in the application.

4a) Of the above claim(s) *11-19,21 and 23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,7,9,10,20 and 22* is/are rejected.

7)☒ Claim(s) *3-6,8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FUEL SUPPLY APPARATUS FOR FUEL CELL

Examiner: Z. Best S.N. 10/510,103 Art Unit: 1795 November 5, 2008

DETAILED ACTION

1. Applicant's amendment filed on August 28, 2008 was received. The specification was amended. The drawings were amended. Claims 2-7, 20, and 22 were amended. Claim 1 was cancelled. Claims 11-19, 21, and 23 are withdrawn from consideration.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Specification

3. The objection to the specification is withdrawn because the title of the invention was amended.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim recitation "wherein the selectively shutting off the plurality of ejectors comprises moving the valve body to select any one of the ejectors" is not found in the instant specification. Examiner notes the instant specification wherein movement of the valve body allows the shut-off portion to be selected, which shuts off the ejector units (pg. 17, lines 2-7). If Applicant believes this rejection to be in error, Examiner requests that Applicant point specifically to the areas in the specification where the claim amendment is believed to be supported.

Claim Rejections - 35 USC § 102

6. Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (U.S. Pre-Grant Pub. 2002/0022171 A1).

Regarding Claim 22, Saito et al. teach a method of controlling a fuel cell system comprising preparing a fuel cell (11), preparing a hydrogen supply source supplying hydrogen to the fuel cell (H2), preparing ejectors disposed between the fuel cell and the hydrogen supply source (30), supplying hydrogen to the fuel cell for electric power generation (par. 77 and 81), expelling excess hydrogen from the fuel cell as a result of non-use for the electric power generation (par. 37), and selectively shutting off the plurality of ejectors depending on a demanded parameter to allow the excess hydrogen, expelled from the fuel cell, to be recirculated thereto through at least selected one of the plurality of

ejectors (fig. 3-4, and par. 41), wherein the plurality of ejectors comprise an ejector unit (fig. 3), the ejector unit comprising a housing (fig. 3, area shaded with diagonal lines) formed with a hydrogen inlet port (31), a hydrogen outlet port (32), and a hydrogen recirculation port (35), and a valve body (66) moveably received in the housing and incorporating the ejectors, wherein the selectively shutting off the plurality of ejectors comprises moving the valve body to select any one of the ejectors (fig. 4 and par. 58 *et seq.*, see "ON" and "OFF" state).

Claim Rejections - 35 USC § 103

7. Claims 2, 7, 9-10, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. (U.S. Pre-Grant Publication 2002/0022171 A1), in view of Sahoda et al (U.S. Patent No. 6,706,438 B2).

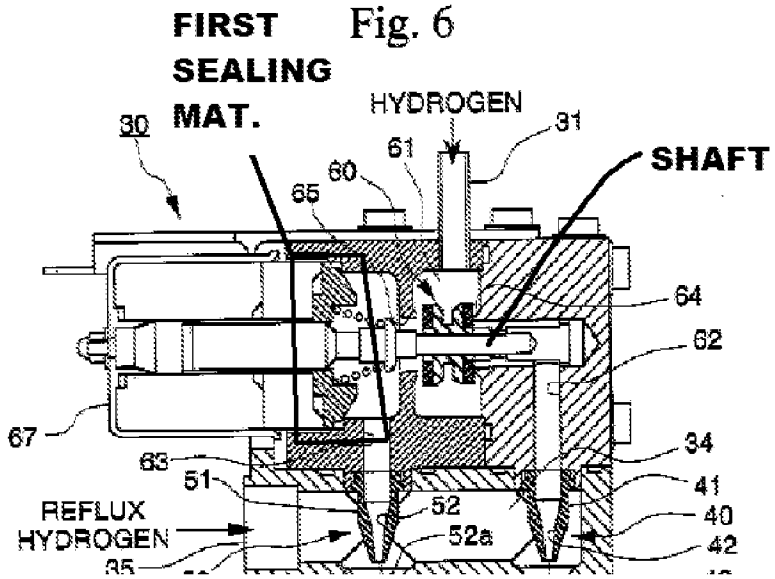
Regarding Claim 2, Saito et al. teach a fuel cell system comprising a fuel cell (11), a hydrogen supply source supplying hydrogen to the fuel cell (H2), ejectors disposed between the fuel cell and the hydrogen supply source (30), and permitting excess hydrogen, expelled from the fuel cell, among hydrogen supplied to the fuel cell from the hydrogen supply source to be recirculated to the fuel cell (fig. 1), and a shut-off mechanism selectively shutting off hydrogen communicating through at least one of the ejectors (67), wherein the ejector unit comprises a housing (fig. 3, area shaded with diagonal lines) formed with a hydrogen inlet port (31), a hydrogen outlet port (32), and a hydrogen recirculation port (35), and a valve body moveably received in the housing and incorporating a plurality of ejector sections (60, 62, and 63), wherein movement of the valve body allows either one of the

plural ejector sections to be selected (par. 41).. However, Saito et al. fail to teach said fuel cell system comprising more than three ejectors.

Sahoda et al. teach a fuel cell system comprising a fuel cell (11), a hydrogen supply source (H2), and three or four ejectors (col. 2, lines 47-56). It is advantageous to use three or four ejectors in the fuel cell system because it improves the stoichiometry characteristics of the fuel cell system (col. 2, lines 47-56). Therefore, it would have been advantageous to one having ordinary skill in the art at the time the invention was made to create the fuel cell system of Saito et al. with four ejectors because Sahoda et al. teach that using four ejectors will improve the stoichiometry characteristics of the fuel cell system.

Regarding Claim 7, Sahoda et al. teach a diffuser (131) commonly used for the plurality of ejectors (fig. 9).

Regarding Claim 9, Saito et al. teach a shaft having one end connected to the valve body (see fig. 6), an actuator (67) connected to the other end of the shaft to an outside of the housing (fig. 3, area shaded with diagonal lines), a first sealing material disposed between the shaft and the housing (see fig. 6), and second sealing materials disposed at respective contacting peripheries between the hydrogen inlet port, the hydrogen outlet port, and the valve body (60).



Regarding Claim 10, Saito et al. teach sealing materials disposed at the contacting peripheries of the ejector (see fig. 6, and element 60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a sealing material disposed at the contacting peripheries between the hydrogen inlet, hydrogen outlet, and hydrogen circulation ports and the valve body because it would improve the resistance to leakage.

Regarding Claim 20, Saito et al. teach a fuel cell system comprising a fuel cell (11), a hydrogen supply source supplying hydrogen to the fuel cell (H2), ejectors disposed between the fuel cell and the hydrogen supply source (30), and permitting excess hydrogen, expelled from the fuel cell, among hydrogen supplied to the fuel cell from the hydrogen supply source to be recirculated to the fuel cell (fig. 1), and a shut-off mechanism selectively shutting off hydrogen communicating through at least one of the ejectors (67), the ejector unit comprising a housing (fig. 3, area shaded with diagonal lines) formed with a hydrogen

inlet port (31), a hydrogen outlet port (32), and a hydrogen recirculation port (35), and a valve body (66) moveably received in the housing and incorporating the ejectors, wherein movement of the valve body allows any one of the ejector sections to be selected (fig. 4 and par. 58 *et seq.*, see "ON" and "OFF" state). However, Saito et al. fail to teach said fuel cell system comprising more than three ejectors.

Sahoda et al. teach a fuel cell system comprising a fuel cell (11), a hydrogen supply source (H2), and three or four ejectors (col. 2, lines 47-56). It is advantageous to use three or four ejectors in the fuel cell system because it improves the stoichiometry characteristics of the fuel cell system (col. 2, lines 47-56). Therefore, it would have been advantageous to one having ordinary skill in the art at the time the invention was made to create the fuel cell system of Saito et al. with four ejectors because Sahoda et al. teach that using four ejectors will improve the stoichiometry characteristics of the fuel cell system.

Allowable Subject Matter

8. Claims 3-6 and 8 are objected to as being dependent upon a rejected base claim, but the Claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 3 would be allowable because the prior art of record, Saito et al. and Sahoda et al., does not disclose or suggest the valve body comprises a hydrogen recirculation flow passage communicating with the hydrogen recirculation port, wherein the valve body has a cylindrical shape and received in the housing for a sliding and moving capability along an axis of the valve body, and wherein

the plural ejector sections are disposed in the valve body in communication with the hydrogen recirculation flow passage along a direction in which the valve body slides such that sliding movement of the valve body effectuated in the housing allows either one of the plural ejector sections to be brought into communication with the hydrogen inlet port and the hydrogen outlet port of the housing. Claim 4 would be allowable because the prior art of record, Saito et al. and Sahoda et al., does not disclose or suggest the valve body comprises a hydrogen recirculation flow passage communicating with the hydrogen recirculation port, wherein the valve body has a cylindrical shape and received in the housing for a rotationally moving capability about an axis of the valve body, and wherein the plural ejector sections are disposed in the valve body in communication with the hydrogen recirculation flow passage along a direction in which the valve body rotationally moves such that rotational movement of the valve body effectuated in the housing allows either one of the plural ejector sections to be brought into communication with the hydrogen inlet port and the hydrogen outlet port of the housing. Claim 5 would be allowable because the prior art of record, Saito et al. and Sahoda et al., does not disclose or suggest the valve body comprises a hydrogen recirculation flow passage communicating with the hydrogen recirculation port, wherein the valve body has a spherical shape and received in the housing for a rotationally moving capability about a central axis of the valve body, and wherein the plural ejector sections are disposed in the valve body in communication with the hydrogen recirculation flow passage along a direction in which the valve body rotationally moves such that rotational movement of the valve body effectuated in the housing allows either one of

the plural ejector sections to be brought into communication with the hydrogen inlet port and the hydrogen outlet port of the housing. Claim 6 would be allowable because the prior art of record, Saito et al. and Sahoda et al., does not disclose or suggest the valve body comprises a hydrogen recirculation flow passage communicating with the hydrogen recirculation port, wherein the valve body has a cylindrical shape and received in the housing to rotationally move about an axis of the valve body while sliding along the axis thereof, and wherein the plural ejector sections are disposed in the valve body on a spiral configuration in communication with the hydrogen recirculation flow passage along a direction in which the valve body rotationally moves while in sliding movement such that rotational movement of the valve body while in sliding movement effectuated in the housing allows either one of the plural ejector sections to be brought into communication with the hydrogen inlet port and the hydrogen outlet port of the housing. Claim 8 would be allowable because the prior art of record, Saito et al. and Sahoda et al., does not disclose or suggest the valve body moveably received in the housing and incorporating a plurality of ejector sections and further comprising a shut-off portion to shut off the hydrogen inlet and the hydrogen outlet port during movement thereof.

Response to Arguments

9. Applicant's arguments filed on August 28, 2008 have been fully considered, but they are not persuasive.

Applicant argues:

(a) the valve body of Saito et al. does not incorporate the first and second injectors.

In response to Applicant's arguments:

(a) "Incorporate" is defined as "formed or united as a whole." See WordNet search, attached. Saito et al. clearly illustrates a valve body moveably received in the housing that is formed or united as a whole with the ejector sections (fig. 3). In other words the valve does not merely switch the hydrogen inlet streams between pipes leading to the ejector sections; instead, the valve body is formed or united as a whole structure within the housing (Saito et al., fig. 3, area shaded with diagonal lines) with said ejector sections integrated within the same housing. The term "incorporating," as defined above, does not require that the ejector sections be within the valve body. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22,13 USPQ2d, 1320, 1322 (Fed. Cir. 1989).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Best whose telephone number is (571) 270-3963. The examiner can normally be reached on Monday to Thursday, 7:30 - 5:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

zpb

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795